Second Five-Year Review Report

Second Five-Year Review Report
for
Organic Chemical, Inc. Superfund Site
City of Grandville
Kent County, Michigan

September 2004

PREPARED BY:

United States Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by: Date:

for Richard C. Karl, Director
Superfund Division

9/29/04

Second Five-Year Review Report

Second Five-Year Review Report
for
Organic Chemical, Inc. Superfund Site
City of Grandville
Kent County, Michigan

September 2004

PREPARED BY:

United States Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by: Date:

Richard C. Karl, Director
Superfund Division

Table of Contents

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDEQ	Michigan Department of Environmental Quality
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PPB	Parts per Billion
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
VOC	Volatile Organic Compound

Executive Summary

The remedy for the Organic Chemical, Inc. (OCI) Superfund Site (the Site) included excavation and disposal of surrounding soils, and extraction and treatment of groundwater contamination to MCLs. The groundwater system operated from May 1995 until July 1997. At MDEQ's request, the system was shut down at that time when the effluent from the treatment plant, discharging to Roys Creek, failed an aquatic toxicity test. It was never restarted because the remedy in the OU2 ROD allowed for an Alternate Point of Compliance (APC), which authorizes the PRPs to turn off the extraction and treatment system if certain conditions are met, while maintaining the system for future use if necessary. The Site achieved construction completion with the signing of the Preliminary Close Out Report (PCOR) on September 29, 2003. This five-year review is the second five-year review conducted for the Site. The first five-year review for this Site was completed on September 15, 1999. The trigger for this five-year review was the completion of the first five-year review signed September 15, 1999.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the two Record of Decisions (ROD). An Explanation of Significant Difference (ESD) was issued in 2003 to modify the treatment of contaminated soil, allow for an APC, which allows the PRPs to turn off the extraction and treatment system if certain conditions are met, while maintaining the system for future use if necessary, and allows for an APC that differs from the ROD.

The remedy is protective of human health and the environment in the short and long term. Implementation and maintenance of deed restrictions and institutional controls in case of future Site development are expected to lessen the likelihood of human exposure to contaminants. The institutional controls are listed in the Restrictive Covenants in both consent decrees. The signed and registered Restrictive Covenants can be found for the two PRP groups in the APC Demonstration Report and the Administrative Record.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Organic Chemical, Inc. Superfund Site		
EPA ID *(from WasteLAN)*: MID990858003		
Region: 5	**State:** MI	**City/County:** Grandville/ Kent

SITE STATUS	
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ☒ Complete	
Multiple Ous?* ☒ YES ☐ NO	**Construction completion date:** 09 / 29 / 2003
Has Site been put into reuse? ☐ YES ☒ NO	

REVIEW STATUS	
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: Thomas G. Williams	
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 5
Review period:** 11 / 09 / 2003 to 9 / 15 / 2004	
Date(s) of Site inspection: 9 / 18 / 2003 & January 16, 2004	
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion)	
Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify)	
Triggering action ☐ Actual RA On-site Construction at OU # N/A ☐ Actual RA Start at OU# 1 ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)	
Triggering action date *(from WasteLAN)*: 9 / 15 / 1999	
Due date *(five years after triggering action date)*: 9 / 15 / 2004	

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1) Work with MDEQ to see that the Site is redeveloped.

2) MDEQ has requested that the Contaminants of Concern (COC) list for the APC be expanded.

Due to the recent completion of the soil remedial action and the granting of the APC, there are no other outstanding issues.

Recommendations and Follow-up Actions:

1) Work with potential developers to redevelop the Site.

2) Work with MDEQ to evaluate the expansion of the COC list for the APC.

Protectiveness Statement(s):

The remedy is protective of human health and the environment in the short term and measures are in place to ensure protectiveness in the long-term. There are no current exposure pathways to a future site worker with appropriate institutional controls in place and followed. The remedy appears to be functioning as designed. The removal of soils, to eliminate a source of contamination, has achieved the remedial objective to implement a remedial action to protect human health and the environment.

Long-term Protectiveness:

The other remaining component of the cleanup is the APC for groundwater. Continued groundwater monitoring of the Site to see that the requirements of the APC are complied with will ensure that the remedy is protective for groundwater. If the contaminant concentration in the groundwater exceeds performance standards at or beyond the APC (unless the exceedance is benzene alone), the PRP's will be required to submit a written cause for the exceedance and submit a plan that proposes additional actions to establish compliance. If the plan is to restart the groundwater treatment plant, the PRP's will be directed to repair and upgrade the system. The PRP's are also responsible for making any repairs to the soil cover or slabs to ensure that no direct contact threats exist.

Other Comments:

None.

ORGANIC CHEMICAL, INC. SUPERFUND SITE
GRANDVILLE, MICHIGAN
SECOND FIVE-YEAR REVIEW REPORT

I. INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

EPA is preparing this Second Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

EPA, Region 5, conducted the second five-year review of the remedy implemented at the Organic Chemical, Inc. (OCI) Superfund Site in Grandville, Michigan. This review was conducted by the Remedial Project Manager (RPM) for the entire site from November 2003 through January 2004. This report documents the results of the review.

This is the second five-year review for the OCI Superfund Site. The first five-year review was completed on September 15, 1999. The triggering action for this statutory review is the initiation of the remedial action on February 9, 1994. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 - Chronology of Site Events

EVENT	*DATE*
Proposed on NPL	December 12, 1982
Listed on NPL	September 8, 1983
Refinery & Bulk Oil Storage Operation OCI Operations	1941 - 1968 1968 - 1991
Phase I RI/FS Phase II RI/FS	March 29, 1989 - July 17, 1991 July 2, 1992 - March 1996
ROD OU 1 Unilateral Administrative Order	September 30, 1991 January 2, 1992
RD for Pump & Treat System	January 2, 1992 - February 9, 1994
Construction of Pump & Treat System	May 1995 - September 1996
Pre-Final Inspection of Pump & Treat System Operation of Pump and Treat System	January 13, 1995 May 1995 - July 1997
OU2 ROD Groundwater Consent Decree Soil Consent Decree	February 5, 1997 February 7, 2000 February 1, 2001
Alternate Point of Compliance Demonstration	February 15, 2000 - TBD
RD for Soil Remediation Soil Remediation	February 16, 2001 - September 26, 2001 September 2001 - TBD
Pre-Final Inspection for Soil Remediation	September 18, 2003
Final Inspection of Entire Site	January 16, 2004
ESD & PCOR	September 29, 2003
First Five-Year Review	September 15, 1999
Second Five-Year Review	September 15, 2004
Next Five-Year Review	Five Years for the signature of this document

III. BACKGROUND

Physical Characteristics

The OCI property is located at 3291 Chicago Drive, S.W., in the city of Grandville, Kent County, Michigan. The OCI property, approximately 5 acres, is fenced, with several buildings and structures occupying the Site (Attachments 1 and 2). The Chesapeake and Ohio Railroad, which runs southeast of the facility and along the north side of Chicago Drive, has an elevated railbed acting as a barrier to surface drainage. There is no visible surface drainage linking the Site and the Grand River, which is located approximately 0.95 miles north. Two gravel quarries have been identified near the OCI Site. One quarry is located 0.3 miles northwest, and the other quarry is 0.2 miles northeast of the Site. Both quarries are inactive and filled with water.

The OCI property is bordered by Tenneco Packaging Inc., on the east, by the Htrans Holdings on the west, and by Developers Inc., on the north. Residential areas are approximately 200 feet southeast of the Site and 1700 feet to the southwest. These properties along with others comprise an industrial park which extends up to I-196, approximately 2000 feet north of the OCI Site. Across I-196 is a wetland area that extends north to the Grand River, and the interstate highway transects the sensitive ecosystem and the industrial park/commercial park.

Land and Resource Use

The OCI property had several buildings and structures occupying the property. The chemical manufacturing operation, which was housed in two buildings along the western boundary of the property, produced small quantities of specialized industrial chemicals and pharmaceutical intermediates. The solvent recovery operation was housed in several buildings along the southeastern portion of the property. Other structures included a warehouse, several drum and storage tank areas, an office building, a boiler facility and a waste water pretreatment facility. OCI stopped operations in May 1991, because of financial problems and the inability to obtain a Resource Conservation and Recovery Act (RCRA) Part B permit. OCI completed RCRA closure of the equipment and tanks in 1992, although never completed a complete closure. Still remaining on-site are several abandoned buildings. Much of the steel tanks and structures have been removed by scavengers. U.S. EPA is working in conjunction with the Michigan Department of Environmental Quality (MDEQ) and the PRPs to redevelop the Site for future industrial use.

There are no natural resource areas associated with the OCI Site which is located in an industrial/ commercial park.

History of Contamination

The Site was previously used for petroleum refining from 1941 to 1945, and transport and storage operations from 1945 to 1966. A succession of petroleum-related industries leased the land prior to its purchase by Spartan Chemicals. Anne R. Herald, owner of the property from approximately 1900 to 1942, issued an oil and gas lease for the entire property to Gerald J. Wagner on December 7, 1937. Mr. Wagner then leased the premises for oil and gas exploration to various third parties. During tenure of these leaseholds, two oil production wells were drilled onsite. One was a dry hole and the other was never completed or maintained. Attempts made to identify the exact locations of these wells by reviewing existing data were unsuccessful.

All oil and gas exploration leases were summarily voided by Ms. Herald on February 7, 1941. Other petroleum industry operations including a refinery commenced onsite in the early 1940's. Total Pipeline Corporation, a petroleum transporter, leased an oil and gasoline warehouse and tank facility onsite during this period. Its facilities were then taken over by its parent company, Total Petroleum, Inc., which operated onsite through 1964. Leonard Fuels purchased the Site in 1964 and sold the property to Total Realty in 1966. In 1968, Spartan Chemical Company acquired the Site property for the solvent reclamation and chemical manufacturing operations of its subsidiary, Organic Chemicals Company (now Organic Chemicals, Inc.). OCI has operated on the Site since 1968 and stopped operation in 1991. In 1979, OCI became the owner of the premises by conveyance of deed from Spartan Chemical Company.

Historical aerial photographs, taken from 1960 through 1978, show changes to the physical facilities of the OCI Site. In a 1960 photograph, three large vertical tanks with two sumps for containing spills were present along the northwestern portion of the former refinery. By 1967, these tanks were no longer present. In 1973, the terrain on the western portion of the former refinery was being regraded and leveled. The ground was visibly scarred from earth moving activity. In this same year there was a seepage lagoon on the OCI property which appeared to contain liquid waste. Two new buildings and six additional vertical storage tanks had been added to the facility in 1973. A 1978 aerial photograph indicates that the west portion of the former refinery was abandoned. This area was owned by Haven-Busch, Co., and was being used as an open storage yard for this steel fabrication company. Haven-Busch, Co., has since closed both their corporate office and their steel fabrication plant and has been sold to Padnos Iron and Metal.

A chemical fire occurred onsite on October 11, 1976, damaging part of the OCI facilities. The cause of the blaze was reported as being started by a spark from a metal drum dragged across a floor. The spark ignited barrels of solvents stored nearby. According to retired Grandville Fire Chief Osterink, the fire was contained in the building and prevented from spreading to other storage tanks outside.

A chemical spill at the Site in November, 1979, was reported to the MDEQ by OCI. On November 3, 1979, 2,200 gallons of lacquer thinner were spilled by an operator onto the

ground onsite. Some of the spilled lacquer thinner was recovered and disposed of in the onsite seepage lagoon.

The OCI Site was classified, on April 14, 1980, as a potential hazardous waste site by the United States Environmental Protection Agency (EPA). The Site was listed on the National Priority List on September 8, 1983. EPA summarized the problem in its Potential Hazardous Waste Site log as "known groundwater contamination by organic solvents." Between 1968 and 1980, company records indicate that OCI discharged its process waste and cooling water, which included F001-F005 hazardous wastes into the onsite seepage lagoon. In June 1980, OCI ceased discharge of wastewater to the seepage lagoon. In 1980, the company installed a wastewater pretreatment facility with discharge to the City of Grandville Sanitary Sewer system. The pretreatment facility included two 9,000 gallon sedimentation tanks and a 30,000 gallon aeration basin with pH adjustment. Also, piping that contains hazardous waste remains on-site, although it has not contributed to groundwater contamination, remains intact. Also, drums were discovered on the northeast side of the Site that were remove and additional soil was removed although additional contamination remained at a depth of approximately five feet and the excavation was backfilled with sand.

Initial Response

In September 1981, seepage lagoon sludges were excavated and transferred to railroad cars. The total removed soil filled approximately seven railroad cars. These sludges were disposed of at Chem-Met Services, Inc., in Wyandotte, Michigan.

A Preliminary Assessment (PA) for the Site was completed by EPA in 1983. The PA documented potential groundwater contamination from the solvent-contaminated seepage lagoon. Soils beneath this pond were also found to be contaminated. A potential for drinking water contamination and endangerment of flora and fauna in nearby potential wetlands was indicated in the PA.

In September 1986, MDEQ Law Enforcement Division personnel responded to a complaint of alleged illegal disposal of hazardous wastes at the facility. Reportedly, OCI personnel were disposing of sludges and other residues generated from the solvent recovery operations by placing these materials into drums and rolloff containers along with their normal nonhazardous solid waste materials. Analyses taken from solid waste storage units (rolloffs and 55 gallon drums) located at the Site revealed the presence of various contaminants including methylene chloride, toluene, ethylbenzene, xylenes and arochlor 1242 polychlorinated bi-phenyls(PCBs). Analyses of soil samples taken from the vicinity of the solid waste storage units revealed the presence of methylene chloride, toluene, xylenes, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, chloroform, 1,1-dichloroethene, 1,2-dichloroethene, and Aroclor 1242 (PCBs).

As a result of this investigation, OCI was cited by EPA on December 3, 1986, to be in violation of RCRA. Among the violations cited were: (1) the unreported generation of hazardous waste from a drum cutting operation; (2) the routine transport of hazardous waste from the Site by unauthorized agents; (3) failure to prepare hazardous waste manifests, and (4) shipment of hazardous waste to unauthorized facilities. Based on these findings, EPA levied fines of $22,500 on OCI.

During August/September 1987, OCI conducted a voluntary investigation in cooperation with MDEQ. Approximately 150 buried drums were discovered and removed from the southwest corner of the OCI warehouse building. Some of these drums contained sludge and liquid residues. Groundwater samples taken at that time from Prein & Newhof's monitoring well, B-11, indicated the presence of 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, dibromochloromethane, toluene, ethylbenzene, and xylenes. Monitoring well B-11 was located south and slightly west of the warehouse building. The drum burial area was excavated down to approximately 17 feet below grade. Soil samples from the bottom of the excavation indicated methylene chloride (13 ug/kg) and tetrachloroethene (2.7 ug/kg) contamination.

OCI stopped operations in May 1991, because of financial problems and the inability to obtain a RCRA Part B permit. OCI performed RCRA closure of the equipment and tanks in 1992, however, a complete RCRA closure of the entire facility was not performed.

Basis for Taking Action

Contaminants

The primary contaminants at the Site are associated with the past operation of the seepage pit by OCI, chemical spills at the Site and past oil related activities. These areas are: the former seepage lagoon, the former lacquer thinner spill Site and petroleum sludge lagoons (Figure 2). These contaminants include elevated levels of chlorinated solvents and benzene, ethylbenzene, toluene, and xylene (BETX) compounds. Lower concentrations of other volatile and semi-volatile organic compounds were also detected. The nature and extent of contamination is presented in the FFS and Phase II RI report and summarized in the following sections.

Hazardous substances that have been released at the Site and have performance standards in each media include:

Soil	**Groundwater**
Benzo(a)anthracene	Vinyl Chloride
Benzo(a)pyrene	1,2-Dichloroethane
Benzo(b)fluoranthene	1,1,1-Trichloroethane
Bis(2-ethylhexy)phthalate	Benzene
Beryllium	Toluene
Lead	Ethylenebenzene

Soil (cont.)	Groundwater (cont.)
Dibenzo(a,h)anthracene	Xylene
Indeno(1,2,3-cd)pyrene	Arsenic
Dieldrin	Barium
2,3,7,8-TCDD(TEF)	Total Chromium
PCB (Arochlor-1248)	Copper
	Lead
	Mercury

Exposure to soil and groundwater were associated with significant human health risks due to exceedances of EPA's risk management criteria for the reasonable maximum exposure scenarios. The carcinogenic risks were highest for exposure to contaminated groundwater from a possible future ingestion pathway. Soil contaminants posed the greatest carcinogenic risk to human health through dermal contact and ingestion by future workers, primarily from Arochlor 1248, polynuclear aromatic hydrocarbons (PAHs), and dioxin/furans. Non-carcinogenic risks for future workers was from lead.

IV. REMEDIAL ACTIONS

Remedy Selection

U.S. EPA had organized this project into two operable units (OU). The first OU, OU1, action was an interim action to address contamination in the upper ground-water system (UGS) by stopping the contaminant plume migration. The final OU, OU2, was to remediate the ground water to comply with MCLs, and the soil contamination to be protective in an industrial setting. The OU2 ROD also allowed for an Alternate Point of Compliance (APC). The APC was granted on June 9, 2004, and included the OCI property and the adjacent property to the west, Htrans Holdings.

The soil, which was the principal threat at the Site was to be addressed by excavation of approximately 6,000 cubic yards of the contaminated soil and on-site treatment by solidification/stabilization. After addition pre-design sampling, the volume of contaminated soils was now approximately 2,500 cubic yards and the remedy was modified to allow for excavation and off-site disposal. An ESD was issued to account for this modification.

The OU1 ROD was signed for the Site on September 30, 1991. The Remedial Action Objectives (RAOs) were developed as a result of data colleted during the Phase I RI/ Focused Feasability Study. This included a single remedial activity to contain and remediate the contaminated groundwater.

The selected remedy had the following specific components:

For contaminated groundwater associated with the Site: Construction and operation of a groundwater pump and treat system to contain the contaminant plume. The treated water to be discharged into Roy's Creek was to be in compliance with the substantive requirements of a NPDES permit.

The OU2 ROD was signed for the Site on February 5, 1997. The RAO's for the Site were developed form the Phase I and II RI. The OU2 ROD addressed the contaminated groundwater by treating it to meet MCLs or granting an APC if certain conditions were met. The OU2 ROD also addressed the contaminated soils by excavation and solidification/ stabilization.

An ESD was signed on September 29, 2003. This ESD documented the temporary shutdown of the groundwater extraction and treatment system to evaluate the need for continued operation of the system. During this shutdown, a study was conducted to evaluate the potential of an APC for the groundwater, as allowed by the ROD. The APC allows the system to be discontinued indefinitely as long as groundwater monitoring demonstrates compliance with the APC and other requirements within the ROD. The second modification addresses groundwater performance standards, MCLs, and a provision in the Consent Decree's Statement of Work (SOW). The last modification noted in the ESD was the off-site disposal of the material versus the originally planned on-site treatment and disposal of the hazardous material.

Quarterly groundwater sampling started in the summer of 1995 and continued through October 2000 and began again in October 2001 through July 2003. Cleanup goals for the groundwater are MCLs for Contaminants of Concern identified in the Phase II RI/ FS throughout the contaminant plume although granting of the APC changed it from throughout the contaminant plume to the OCI property and the adjacent property to the west, Htrans Holdings:

Groundwater Contaminant	Cleanup Goal (ppb)
Arsenic	50
Barium	2,000
Total Chromium	100
Copper	1,300
Lead	15
Mercury	2
1,2-Dichloroethane	5
1,1,1-Trichloroethane	200
Vinyl Chloride	2
Benzene	5
Toluene	1,000
Ethylbenzene	700
Xylene	10,000

The selected remedy for the OU2 ROD addressed the principal threat at the Site by excavation and off- site disposal of the contaminated soils. The following table lists the soil contaminant and the cleanup goal for that contaminant.

Soil Contaminant	Cleanup Goal (ppb)
Benzo(a)anthracene	3,153
Benzo(a)pyrene	2,967
Benzo(b)fluoranthene	3,519
Bis(2-ethylhexy)phthalate	14,488
Beryllium	420
Lead	900,000
Dibenzo(a,h)anthracene	2,350
Indeno(1,2,3-cd)pyrene	2,595
Dieldrin	20
2,3,7,8-TCDD(TEF)	.085
PCB (Arochlor-1248)	7,739

Restrictive Covenants will be placed on the Site. Restrictive Covenants for the groundwater can be found in Appendix H of the APC Demonstration Report. A Restrictive Covenant for the soils will be filed with the Kent County, Register of Deeds in the near future.

The soils Restrictive Covenant has the following major restrictions:

1) A prohibition on all site uses that are not compatible with the industrial site uses;

2) A prohibition on demolition, excavation or the conduct of other intrusive activities that could affect the integrity of existing building foundations and concrete slabs unless provisions are made to replace these features with an engineered barrier of equal or greater competence;

3) A prohibition on the use of groundwater for any purpose other than approved environmental sampling and remediation activities;

4) A prohibition that any buildings constructed at the site have the provisions to prevent the migration of volatile chemical into indoor air;

5) A prohibition on the off-site transport of soils at the site without first testing those soils for hazardous characteristics and then managing those soils in accordance with all federal and state environmental regulations; and

6) A prohibition on subdividing the site into more than one unit to limit the possibility that workers would have repeated exposures to soils in a particular sub area of the site.

Remedy Implementation

The dates that the pump and treat system remedial design was started and completed was January 2, 1992 - February 9, 1994. The groundwater system operated from May 1995 until July 1997. At MDEQ's request, the system was shut down at that time when the effluent from the treatment plant, discharging to Roys Creek, failed an aquatic toxicity test. It was never restarted because the remedy in the OU2 ROD allowed for an APC, which allows the PRPs to turn off the extraction and treatment system if certain conditions are met, while maintaining the system for future use if necessary. The State of Michigan's, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201), which is an ARAR for the Site, requires a demonstration that the contaminant plume is being reduced by a naturally occurring process and that the contaminants will not exceed the groundwater performance standards at the approved APC. The work plan for this demonstration was approved on December 15, 2000. Monitoring of the well network began in September 2001 and was recently completed in June 2003. The APC Demonstration Report was submitted on September 12, 2003, and was approved on June 9, 2004. Attachment 5 shows the monitoring wells sampled in the APC Demonstration. Attachment 6, shows the results of the 8 rounds of sampling for the organic and inorganic compounds in the APC Demonstration. The only contaminant that exceeds the MCL performance standard at the APC is benzene.

The reason that the SOW did not include benzene, if all the other performance standards were met, was because the oil plume that covers much of the 20 acre property contains benzene. Given that there are 12 other contaminants that have MCLs as a performance standard (7 of which are volatiles and three are toluene, ethylbenzene, xylene (TEX) from the BTEX oil designation that includes benzene) and all twelve would have to be below their respective performance standards to achieve compliance, it was considered appropriate to exclude benzene as a contaminant of concern because the oil contamination is not subject to action under CERCLA. The reason that the TEX chemicals were included as a contaminant of concern was that OCI was a solvent recycler and used the TEX chemicals extensively. In addition, the MCL for benzene is at a much lower concentration than the MCLs for the TEX chemicals.

The dates for the soil remedial design start and completion are February 16, 2001 - September 26, 2001. The ROD estimated that approximately 6,000 cubic yards of soils would exceed the cleanup levels and need to undergo solidification/stabilization prior to on-site disposal. The ROD also allowed for a small part of this volume to be taken off-site for disposal as solid waste if necessary. During the remedial design, the volume of soils which needed to be removed from the site to meet the established cleanup levels was determined to be approximately 2,500 cubic yards. In addition, sampling and excavation of soils at the site revealed that a significant volume of soils may either contain higher levels of contamination or contain enough waste material that solidification/ stabilization would be difficult or impossible to implement. Since the volume and nature of wastes can change the cost-effectiveness of various disposal options, the PRPs compared the costs of off-site disposal of all soils to the costs of solidification/stabilization and on-site disposal and identified significant savings for off-site disposal. Therefore the waste was sent off-site. Also, drums that were disposed of on the Site were remediated along with contaminated soil were removed from the Site. The soil RA was started in September 2001 and was completed in September 2003.

A Unilateral Administrative Order was issued on January 2, 1992 to the Abitibi PRP Group for design/construct and operation and maintenance of the pump and treat system.

Two consent decrees have been entered with regard to this Site. The first was entered on February 7, 2003, with the Abitibi PRP Group (U.S. vs. Abitibi Price Corporation, et al.) and is for the development and implementation of the APC study. The second consent decree was entered on February 1, 2001, with Total Petroleum Inc., and was for the design and implementation of the soil remediation.

No CERCLA removal actions or non-CERCLA removal actions have been performed since the signature of either ROD, although the Abitibi Price PRP Group has offered to remove contaminated sludge and water from the existing pretreatment tank if MDEQ agrees to execute an Administrative Consent Decree that would settle any and all potential liability of the Group under Part 201.

System Operations/Operation and Maintenance (O&M)

The groundwater system operated from May 1995 until July 1997. Although the APC has been approved, if the contaminant concentration in the groundwater exceeds performance standards at or beyond the APC (unless the exceedance is benzene alone), the PRP's will be required to submit a written cause for the exceedance and submit a plan that proposes additional actions to establish compliance. If the plan is to restart the groundwater treatment plant, the PRP's will be directed to repair the broken pipe that leads from the extraction well to the treatment system (broken by the other PRP that performed the soil remediation) and upgrade the system.

The capital cost of constructing the pump and treat system was $398,000. The projected cost of operating the treatment plant without being upgraded is $280,000 annually. Ground water monitoring during the operation of the treatment system or with the approved APC is $127,000 annually. Attachment 5 shows the monitoring wells involved in the APC.

The soil remediation requires no O&M other than maintenance of the existing concrete slabs. Contamination is present under some of these slabs which is addressed by institutional controls if they are removed as a result of future development. If additional work is required at the Site, including but not limited to replacement or maintenance of the slabs, it will be handled through the Modification Clause in the TPI Petroleum Inc., Consent Decree or by a new Site owner as appropriate.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

Table 2: Actions Taken Since the Last Five-Year Review

Recommendations From Previous Review	Party Responsible	Action Taken
Grant APC & Obtain Institutional Controls for Groundwater	EPA PRP	Complete June 9, 2004
Continue Monitoring APC	PRP	Ongoing
Complete Soil Remediation In Accordance With OU2 ROD	PRP	Complete
Obtain Institutional Controls for Soil	PRP	Ongoing

The first five-year review recommended granting the APC, obtaining enforceable land use restrictions, continued groundwater monitoring, and remediation of the contaminated soil. Groundwater monitoring has consistently occurred over the last two years as part of the APC Demonstration which concluded that natural attenuation is occurring.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Components

Members of the MDEQ were notified of the initiation of the five-year review in December 2003. The OECI Five-Year Review team was led by Tom Williams of EPA, RPM for the OCI Site, and included the MDEQ Project Manager, and Geologist.

From December 4, 2003 to January 15, 2004, the RPM established the review schedule. Its components included:

- Community Notification;
- Document Review;
- Site Inspections;
- Five-Year Review Report Development and Review.

Community Involvement

Activities to involve the community in the five-year review process were initiated in October 2003 with a notification to the Community Involvement Coordinator (CIC) for the OCI Superfund Site. A notice was published on January 30, 2004 in the local newspaper, the Grand Rapids Press, that a five-year review was to be conducted.

Since the notice and press release were issued, no member of the community voiced any interest or opinion concerning the five-year review process.

Document Review

This five-year review consisted of a review of relevant site documents including, but not limited to, the APC Demonstration Report, and the Soil Remedial Action Report.

Site Inspections

Site inspections were conducted on September 18, 2003 and January 16, 2004. The purpose of the first inspection was to determine if the Site met the requirements to issue a PCOR, which included the pre-final inspection for the soil remediation. The second inspection, on January 16, 2004, was the final inspection for the soil remediation.

Interviews

Interviews with individuals beyond the five-year review project team were not conducted.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the Site inspections indicates that the remedy is functioning as intended by the OU2 ROD, as modified by the ESD. The removal of soils eliminated the principal threat at the Site.

The other remaining component of the cleanup is the APC for groundwater. Continued groundwater monitoring of the Site to see that the requirements of the APC are complied with will ensure that the remedy is protective for groundwater. If the contaminant concentration in the groundwater exceeds performance standards at or beyond the APC (unless the exceedance is benzene alone), the PRP's will be required to submit a written cause for the exceedance and submit a plan that proposes additional actions to establish compliance. If the plan is to restart the groundwater treatment plant, the PRP's will be directed to repair and upgrade the system.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the OCI Site that would affect the protectiveness of the remedy.

Changes in Standards and To be Considers

As the remedial work has been completed, the risk based cleanup for soil in the OU2 ROD have been met. ARARs that still must be met at this time and that have been evaluated include: The Safe Drinking Water Act (SDWA)(40 CFR 141.11-141.16). A list of ARARs is included in Attachment 3. There have been no changes in these ARARs and no new standards or to be considers (TBCs) affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included exposure to contaminated groundwater for future residents through ingestion, dermal contact, and dermal contact pathways, and exposure to contaminated soils from a possible future worker through surface and subsurface soil contaminants (0-10 feet below groundwater surface) through incidental ingestion, inhalation, and dermal contact pathways.

There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. A change in assumptions due to VOCs at the Site requires a restriction against building construction, without regulatory approval, in areas where subsurface VOC contamination is present at concentrations that may pose an indoor air inhalation risk. No other change to these assumptions, or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is progressing as expected.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other events have affected the protectiveness of the remedy and there is no other information that calls into question the short-term protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed and the Site inspections, the remedy is functioning as intended by the OU2 ROD, as modified by the ESD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. No ARARs for soil were cited in the ROD because the remediation was risk based. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect

the protectiveness of the remedy. On going monitoring of the APC will ensure that the groundwater remains protective to human health and the environment.

VIII. ISSUES

Table - Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Work with MDEQ to see if additional COCs are required for the APC	N	Y
Work with MDEQ to see that the Site is redeveloped	N	N

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 4 - Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Work with MDEQ to see if additional COCs are required for the APC	Work with MDEQ on this issue.	MDEQ/EPA	EPA	ASAP	N	Y
Work with MDEQ to see that the Site is redeveloped.	Work with potential developers to redevelop the Site.	EPA/MDEQ / PRP	MDEQ/ EPA	ASAP	N	N

X. Protectiveness Statement

The remedy is protective of human health and the environment in the short-term and measures are being put in place to ensure protectiveness in the long-term. There are no current exposure pathways and the remedy appears to be functioning as designed. The removal of soils, to eliminate the source of contamination has achieved the remedial objectives to minimize the

migration of contaminants to groundwater and surface water and prevent direct contact with, or ingestion of, contaminants in soils which were remediated. Contamination that remains under concrete slabs will be dealt with through institutional controls.

The other remaining component of the cleanup is groundwater containment and restoration by a pump and treat system or by allowing an APC which was granted on June 9, 2004. Continued groundwater monitoring of the Site to see that the requirements of the APC are complied with will ensure that the remedy is protective for groundwater. If the contaminant concentration in the groundwater exceeds performance standards at or beyond the APC (unless the exceedance is benzene alone), the PRP's will be required to submit a written cause for the exceedance and submit a plan that proposes additional actions to establish compliance. If the plan is to restart the groundwater treatment plant, the PRP's will be directed to repair and upgrade the system. If additional work is required at the Site, including but not limited to replacement or maintenance of the slabs, it will be handled through the Modification Clause in the TPI Petroleum Inc., Consent Decree or by a new Site owner as appropriate.

XI. Next Review

The next five-year review for the OCI Site is required by September 2009, five years from the date of this review.

ATTACHMENTS

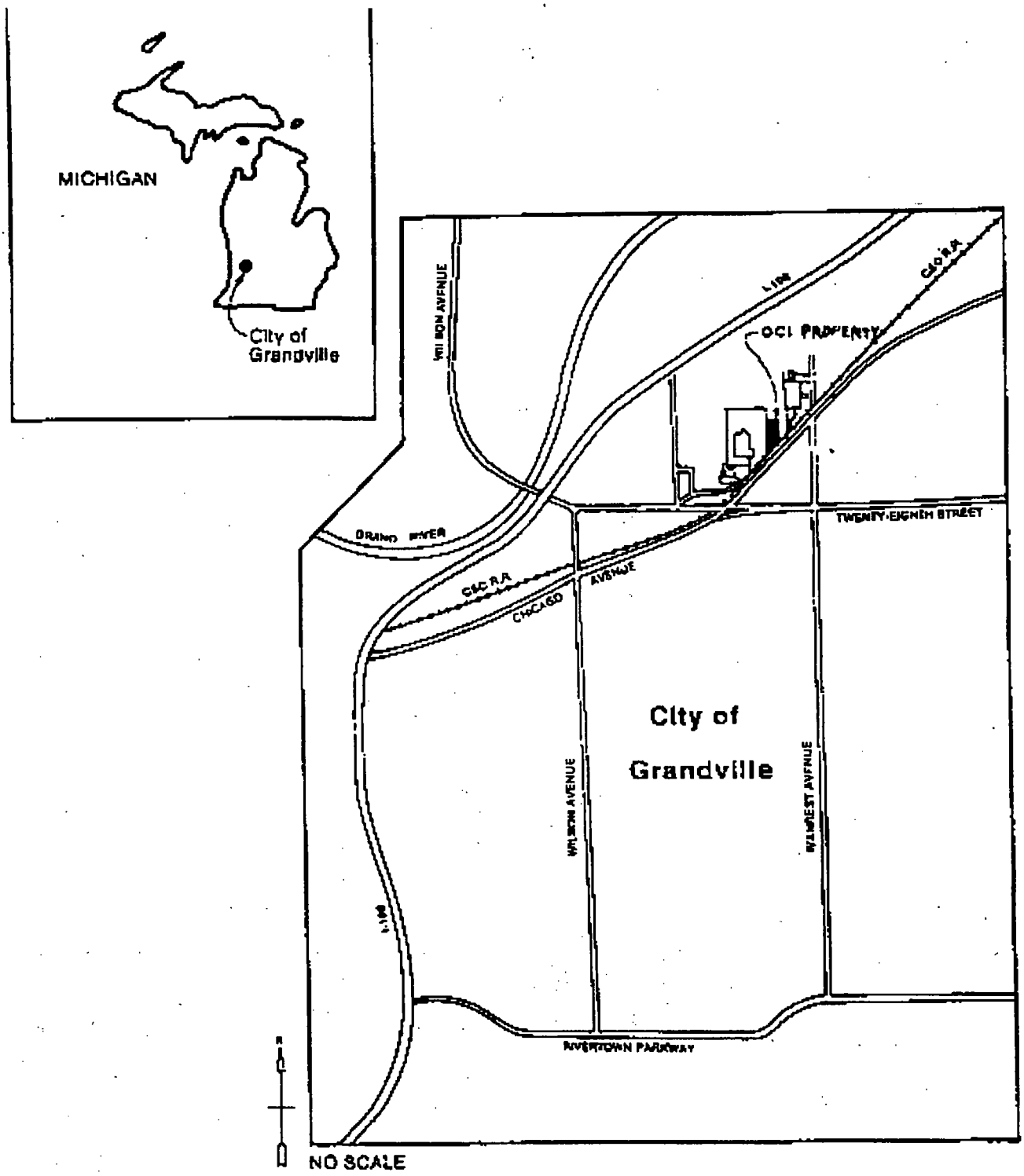

FIGURE 1
OCI SITE LOCATION MAP

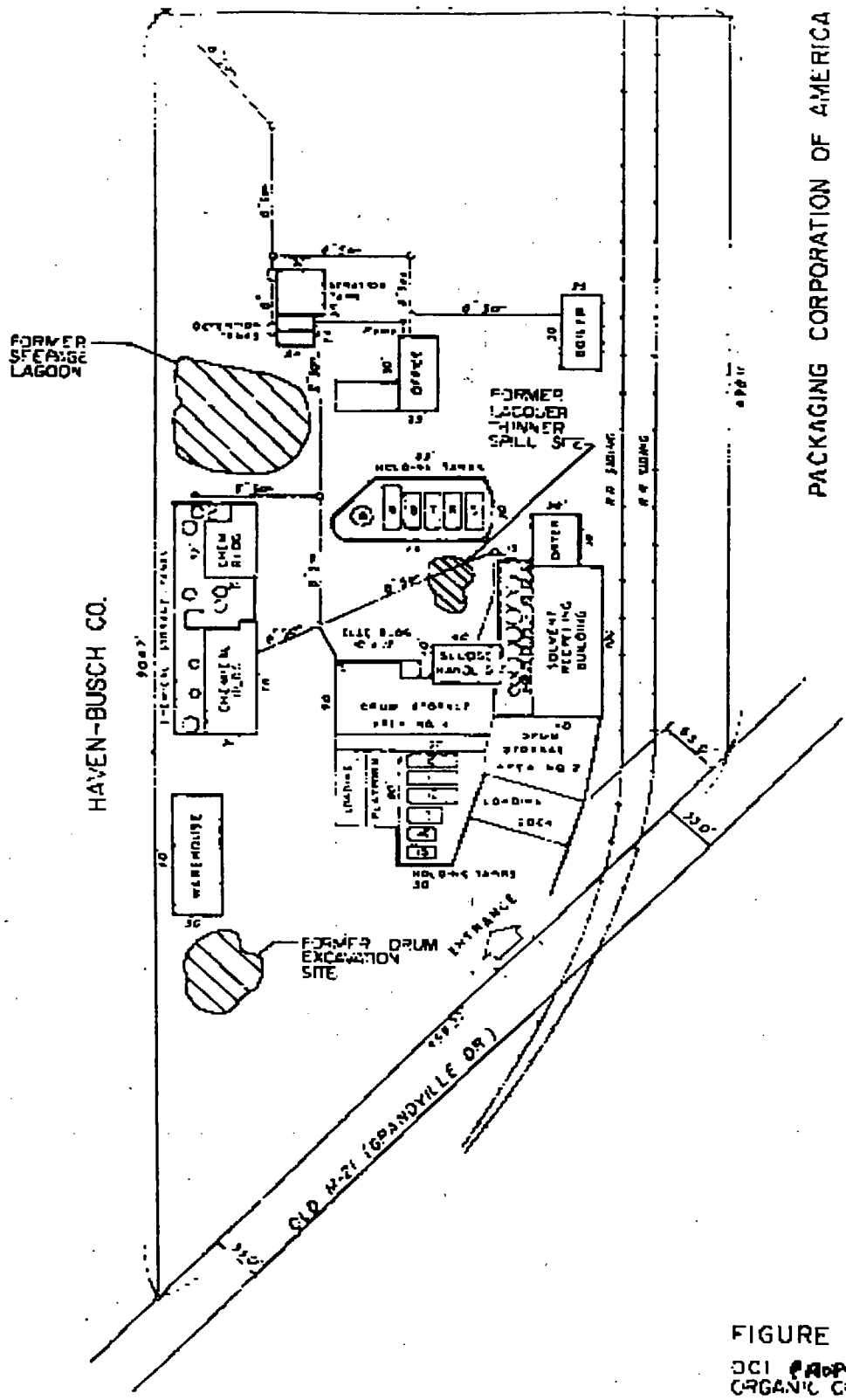

FIGURE 2

DCI PROPERTY DETAIL
ORGANIC CHEMICALS INC. SITE

ATTACHMENT 3

List of Documents Reviewed

OCI Superfund Site Record of Decision, September 30, 1991

OCI Superfund Site Record of Decision, February 5, 1997

OCI Superfund Site First Five-Year Review, September 15, 1999

OCI Superfund Site Explanation of Significant Differences, September 29, 2003

OCI Superfund Site Preliminary Close-Out Report, September 29, 2003

OCI Superfund Site APC Demonstration Report and Addendum, September 2003 and January 14,2004 respectively

OCI Superfund Site Soil Remedial Action Completion Report, Draft March 15, 2004

ATTACHMENT 4

ARARs

Safe Drinking Water Act

Michigan's, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended

Clean Water Act

R323.3102-.2189 of the Michigan Water Resources Commission Act, Public Act 245 of 1929, as amended

ATTACHMENT 5

ATTACHMENT 6